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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/673,088
Filing Date: September 26, 2003
Appellant(s): WASSERMAN ET AL.

WASSERMAN ET AL.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 29, 2007 appealing from the Office action mailed November 14, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5524075	ROUSSEAU ET AL.	6-1996
6417861	DEERING ET AL.	6-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5, 6-14, 18, 19 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable Rousseau et al. (U.S. Patent No. 5,524,075) in view of Deering et al (U.S. Patent No. 6,417,861).

Referring to claim 1, Rousseau et al. teach a system for distributed convolution of stacked digital video data comprising:

a plurality of video data convolve units connected in a chain (Fig. 6C, 3416s), to compute a convolution defined by a convolution kernel of size up to 3 X 4 (Fig. 3, 170A-170D), calculate partial convolution sums for a set of the video pixels that are located within a convolution kernel, and further teach receive accumulated partial convolution sums from a prior video data convolve unit in the chain, unless the video data convolve unit is the first video data convolve unit in the chain; add the calculated partial convolution sums to the previously accumulated partial convolution sums; and output new accumulated partial convolution sums to the next video data convolve unit in the chain, unless the video data convolve unit is the last video data convolve unit in the chain (Fig. 6C, 6H, col. 14, line 55 to col. 15, line 21, and Fig. 6J, col. 17, lines 22-27).

Although Rousseau et al. do not teach receiving video pixel from a video output of a dedicated rendering unit, this is what Deering teaches. Deering teaches video data convolve

units (170A – 170D) receive pixel data from rendering units (Fig. 3, rendering unit 150A-150D). It would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of Deering and Rousseau et al. because the system of Deering provides real time filter process and may use a number of different filter types and thus provides better flexibility to the system as taught by Deering (abstract). Therefore, at least claims 1 and 4 would have been obvious.

As per claim 2, Rousseau et al. teach at least one bus (Fig. 6J, shift input, data input, shift output, data output) to connect a video data convolve unit in the chain to the next video data convolve unit in the chain.

As per claim 3, Rousseau et al. teach the video data is converted to a digital data format utilized by the video data convolve unit (col. 4, lines 49-65).

As per claim 5, although not explicitly stated, Rousseau et al. teach a video line buffer to store lines of video pixels as illustrated as current line, previous line, and next line in Fig. 6H.

As per claim 6, as cited above, Rousseau et al. teach the video data convolve unit further comprises a convolution calculation unit that is operable to calculate partial convolution sums for the set of pixels, a partial results accumulator that is operable to add the partial convolution sums to corresponding partial results received and to output the new accumulated partial results, and a pixel value calculator that is operable in the last video data convolve unit in the chain to determine values for a convolved pixel from the final accumulated partial sums (with reference to Figs. 6C, 6H, 6J).

Claims 7 and 8 are similar in scope to claims 1 and 2, and thus are rejected under similar rationale.

As per claims 9 and 13, Deering teaches a video blend unit that is operable to receive convolved video pixels from a prior video data convolve unit and output a stream of convolved video pixels that is a combination of the received and generated video pixels ordered by screen location (col. 32, lines 15-27).

Claims 10-12 are similar in scope to claims 1 and 2, and thus are rejected under similar rationale.

Claim 14 is similar in scope to claim 1, and thus is rejected under similar rationale.

Claims 18 and 19 are similar in scope to claims 3 and 4, and thus are rejected under similar rationale.

As per claim 21, Deering teaches each graphics rendering unit renders video pixels for primitives located anywhere in screen space (150A-150D).

Claim 22 is similar in scope to claim 1, and thus is rejected under similar rationale.

As per claim 23, although Rousseau et al. do not teach outputting the convolved video pixels to a display, Deering teaches this feature in Fig. 3.

As per claim 24, Deering teaches each rendering units renders video pixels for a different portion of screen space (150).

As per claim 25, Deering teaches frustum culling may be utilized to soft the geometric primitives by screen portions ... (col. 32, lines 15-27).

Allowable Subject Matter

3. Claims 15-17 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter:

The prior art made of record fails to anticipate or make obvious the claimed invention. Specifically, the prior art fails to teach or suggest, in combination with the remaining elements and/or steps, further comprises specifying a different jitter value or jitter pattern and rendering pixel values for each jittered pixel ... as recited in claim 15; for the last video data convolve unit in the chain; determining parameter values ... as recited in claim 16; and the pixel data from each rendering unit are determined for primitives that are geometrically expanded in both x and y dimensions by ... as recited in claim 20.

(10) Response to Argument

5. Applicant's arguments filed 09/05/2006 have been fully considered but they are not persuasive. In response to Applicant's argument that the combined cited reference does not teach "receiving video pixel from a video output of a dedicated rendering unit," the examiner disagrees. First, since the "rendering unit" is not defined to have a specific meaning, it is given the broadest reasonable interpretation. Therefore, in its common sense, the digital signal processor 21 (col. 9, lines 13-20) as taught by Rousseau et al. can be interpreted as a "rendering unit". In addition, each convolve unit as taught by Rousseau et al. receiving video pixel data and calculating the convolution steps as claimed. Moreover, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references

against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, the examiner does not rely his ground of rejection solely on Deering et al. (U.S. Patent No. 6,417,861) but also by Rousseau et al. (U.S. Patent No. 5,524,075). Therefore, it would have been obvious to one skilled in the art to combine the method of providing video pixels from the "rendering unit" (DSP 21) to the convolve units as taught by Rousseau et al. utilizing the configuration of the rendering units "dedicated" to each convolve unit as taught by Deering to obtain the advantage cited above in the rejection.

For at least the above reasons, the claims would have been obvious over the cited prior art.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

H. Nguyen

Conferees:

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